

AEGIS BALLISTIC MISSILE

Aegis BMD; The Way Ahead

DEFENSE

Ms. Laura DeSimone
Deputy Program Executive, Aegis BMD

6 December 2011

Approved for Public Release: 11-MDA-6487 (1 Dec 11)



Aegis BMD's Role in the BMDS

Aegis BMD

Ascent/Midcourse Engagement Capability **Defeats Short,** Medium & Intermediate Range Ballistic Missiles





Terminal Defense Capability Defeats Shorter Range Ballistic Missiles

Future Adding Early Intercept **Capability**

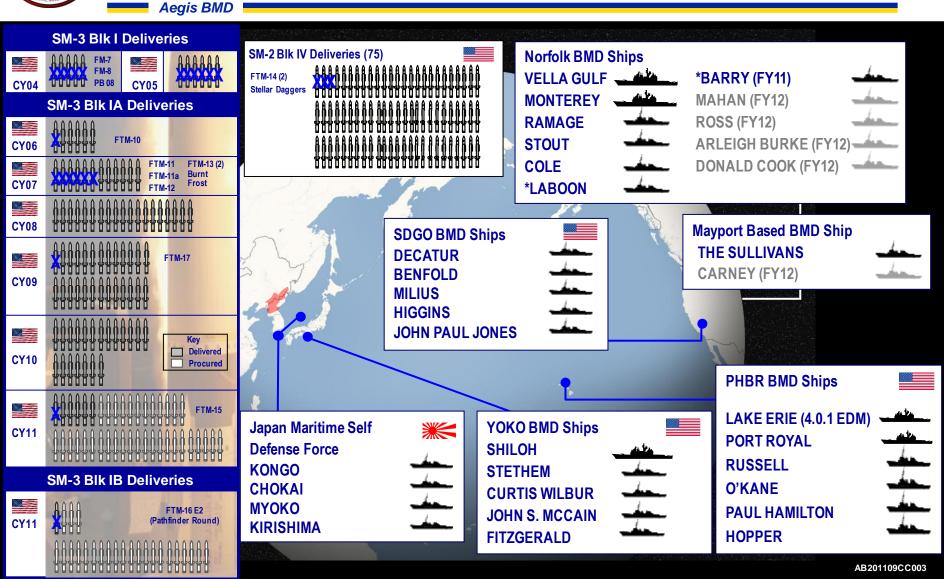
Anti-ICBM w/SM-3 Blk IIB (Aegis Ashore)

Long Range Surveillance & Track **Function Detects and Tracks in Early Ascent Phase Providing** Forward Based BMDS **Sensor Support**

Proven Against Single Salvo, Dual Salvo & Separating Targets



Aegis BMD Fleet Today (November 2011)





Aegis BMD SM-3 Evolution Spiral Development with Incremental Capability Improvements

Aegis BMD

	SM-3 BIK I/IA	SM-3 Blk IB	SM-3 BIK IIA	SM-3 BIK IIB
	Kinetic Warhead (KW) 1-Color Seeker Pulsed Solid Divert / Attitude Control System (SDACS)	•KW - 2-Color Seeker - Throttleable Divert / Attitude Control System (TDACS)	Large Diameter KW 21" Clamshell Nosecone 2 Color Seeker High Divert DACS Increased Operating Time	• Lightweight KV (Notional)
2nd and 3rd Stage	•13.5" Propulsion	•13.5" Propulsion	•21" Propulsion - Increased Missile Vbo	New U.S. Developed 27" Propulsion High Performance Liquid Upper Stage
1st Stage	•MK 41 Vertical Launch System (VLS)	•MK 41 VLS	•MK 41 VLS	• Modified MK 41 VLS
	•MK 72 Booster	•MK 72 Booster (Potential Range Safety Mods for Aegis Ashore)	•MK 72 Booster	Large Diameter Booster
	Deployed Since 2004 PAA Phase I	First Flight 2011 PAA Phase II	First Flight 2015 PAA Phase III	2020 Deploy Land-Based PAA Phase IV



Aegis BMD 4.0.1 & SM-3 Block IB 2nd Generation Weapons System

Aegis BMD

*Aegis BMD 4.0.1 Computer Program and Equipment System:

Approach: Improve Shipboard Signal & Data Processing

Threats: More Sophisticated Short to

Intermediate Range Ballistic Missiles



Launch on Remote

Operational: - Increased Raid Density

- Flexible Firing Doctrine

Cost: \$45-\$55M

Quantity: 1 Test Ship

Provider: Lockheed Martin, NJ & Navy Field Activities/Labs

Status: Initial At-Sea Testing Underway, Available Late CY2011

*Can Also Fire SM-3 Blk IA

SM-3 Block IB Missile:

Approach: Improve SM-3 Kill Vehicle Seeker

& Engine

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short to

Intermediate Range Ballistic Missiles

Cost: \$12-\$15M (est.)

Quantity: >300 Planned, Test Rounds Being

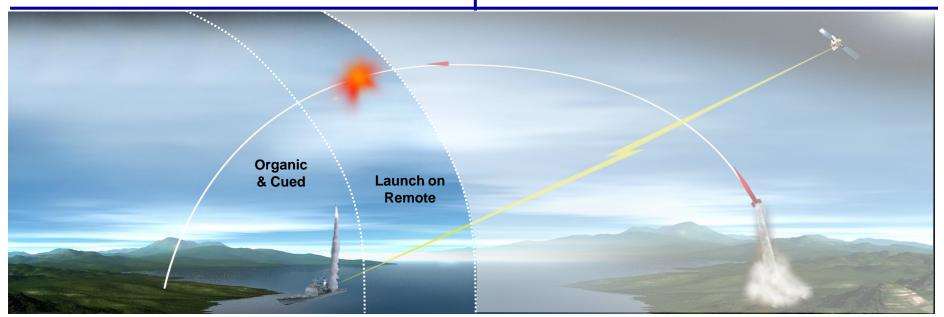
Fabricated

Provider: Raytheon, Arizona & Navy Field

Activities/Labs

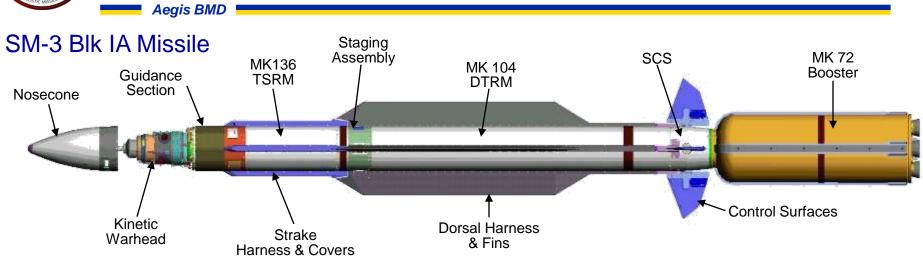
Status: First Flight CY2011

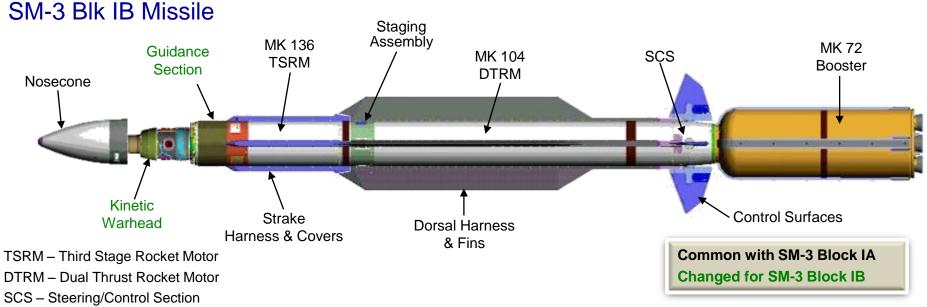
IOC 2013





Aegis BMD SM-3 Missile Profile





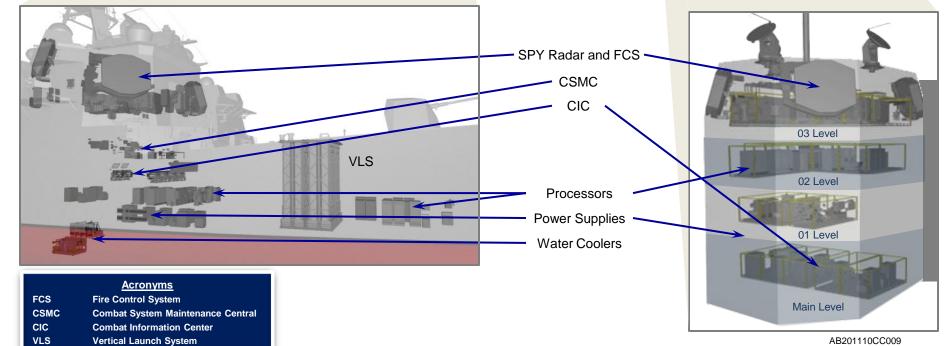


Aegis BMD Transition From Sea To Ashore



U.S. Navy Destroyer (DDG 113)







Aegis BMD 5.0 & SM-3 Block IB

Aegis BMD

* † Aegis BMD 5.0 Computer Program and Equipment System:

Approach: Integration of BMD 4.0.1 Capability into Aegis

Modernization/Advanced Capability Build-12

Threats: More Sophisticated Short to

Intermediate Range Ballistic Missiles

Launch on Remote

Operational: - Increased Raid Density

Flexible Firing Doctrine

Cost: \$10M for Ship Integration of BMD 5.0 as part of ACB-12

(Material; Procurement of ORDALTS; Installation)

Lockheed Martin, NJ & Navy Field Activities/Labs Provider:

Under Development as Part of ACB-12, Available 2014 Status:

Can Also Fire SM-3 Blk IA

† BMD Module in Navy's ACB-12

SM-3 Block IB Missile:

Approach: Improve SM-3 Kill Vehicle Seeker

& Engine

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short to

Intermediate Range Ballistic Missiles

\$12-\$15M (est.) Cost:

Quantity: >300 Planned, Test Rounds Being

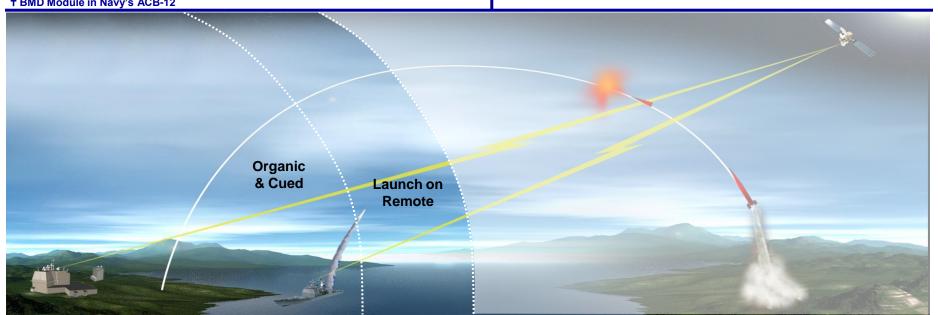
Fabricated

Provider: Raytheon, Arizona & Navy Field

Activities/Labs

Status: First Flight CY2011

IOC 2013





Aegis BMD 5.0 CU, SM-3 Block IB & SM-6

Aegis BMD

Aegis BMD 5.0 CU Development Strategy

- Aegis Baseline 9 (ACB12/ABMD 5.0) is foundation for Aegis BMD 5.0 Capability Upgrades
- Integrates into the Baseline 9 Common Source Library

Aegis BMD 5.0 CU Capabilities

- Incorporate Endo Organic Engagement
- Expand/Update Baseline 9 MRBM and IRBM threat set
- Increase SM-3 engagement capacity and Max SM-3 Missiles in Fight
- Sea-Based Terminal Increment 1 with SM-2 Block IV and SM-6



Approach: Improve SM-3 Kill Vehicle

Seeker & Engine

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short

to Intermediate Range

Ballistic Missiles

Cost: \$12-\$15M (est.)

Quantity: >300 Planned, Test Rounds

Being Fabricated

Provider: Raytheon, Arizona &

Navy Field Activities/Labs

Status: First Flight CY2011

IOC 2013

SM-6 Missile (Modified):

Approach: Modify Existing

SM-6 Missiles

Battle Space: In the Atmosphere

Threats: Short and Medium Range

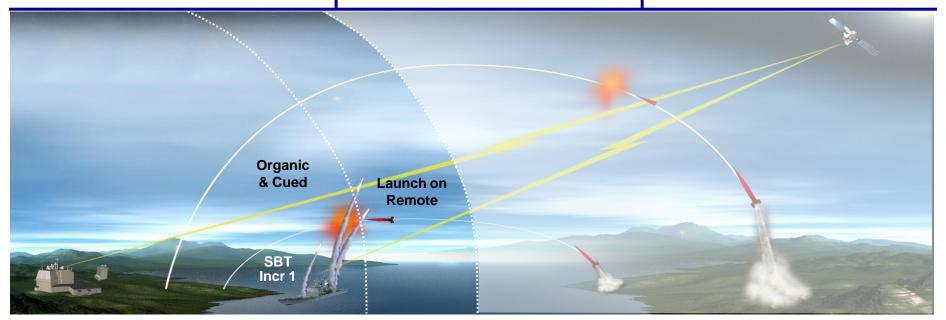
Ballistic Missiles

Quantity: TBD

Provider: Raytheon, Arizona &

Navy Field Activities/Labs

Status: IOC FY15





Aegis BMD 5.1, SM-3 Block IIA & SM-6 **3rd Generation Weapons System**

Aegis BMD

Aegis BMD 5.1 Computer Program and **Equipment System:**

Approach: Modify Existing Systems to Fly SM-3 Blk IIA

& Use Off Board Sensors for Engagement

More Sophisticated Short to Intermediate Threats:

Range Ballistic Missiles



Engage on Remote

Operational: Flexible Firing Doctrine

Cost: \$23M Quantity: **TBD**

Provider: **Lockheed Martin, NJ & Navy**

Field Activities/Labs

Status: **Development, IOC 2018**

SM-3 Block IIA Missile:

Approach: Increased Reach & Velocity Biggest

Missile Compatible w/Mk41 VLS

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short to Some

Intermediate Range Ballistic

Missiles

~\$20M-\$24M Cost:

Quantity: TBD

Provider: Joint U.S. & Japan

Status: Development, 1st Flight Late 2016

SM-6 Missile (Modified):

Approach: **Modify Existing**

SM-6 Missiles

Battle Space: In the Atmosphere

Threats: **Short and Medium Range**

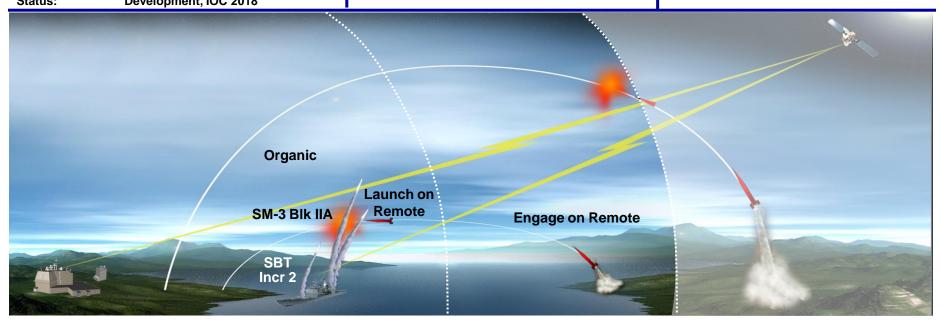
Ballistic Missiles

Quantity: **TBD**

Provider: Raytheon, Arizona &

Navy Field Activities/Labs

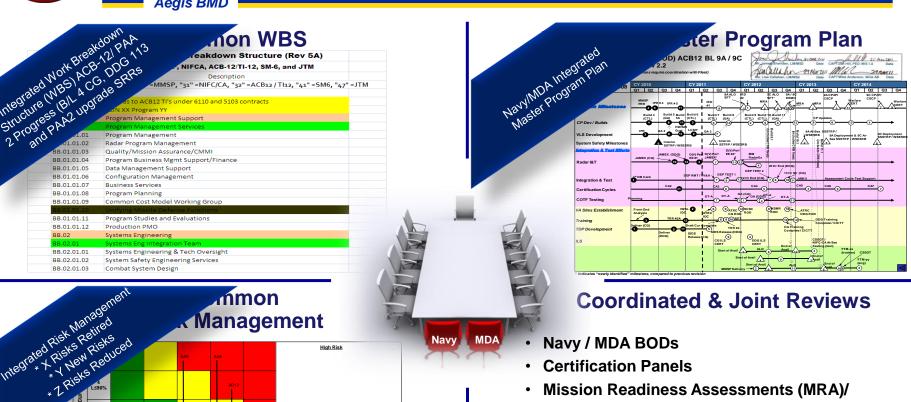
IOC FY15 Status:





Navy/MDA Joint Management





- Test Readiness Reviews (TRRs)
- Engineering Technical Reviews, AA PDR, CDR, B/L 4 CG/SBT SRR and DDG 113/PAA 2 SRR
- Risk Management Board (RMB)
- **Deep Dives/Focus Days for Engineering Technical** Reviews (AA...SRR)

Collaboratively Managing Lockheed Martin Through Common Processes, Reviews and Coordinated Contractual Direction

Legend

AD = 4.0.1 SM-3 Blk IB AA = Aegis

3 L≤70%

2 L≤30%

1 L≤10%



Aegis BMD . . . We Deliver

Aegis BMD



Enabling Capabilities, Providing Options for U.S. and Allies





Aegis BMD 3.6.1, SM-2 Block IV & SM-3 Block IA

Currently Fielded Weapon System

Aegis BMD

Aegis BMD 3.6.1 Computer Program and Equipment System:

Approach: **Modify Existing Ship Systems**

Short to Intermediate Range Threats: **Ballistic Missiles**

Initial Launch on Remote

Operational: - Retain Multi Mission

Capability

- Near Term Sea Based Terminal

Quantity: 23 (as of 16 November 2011)

Provider: Lockheed Martin, NJ & Navy

Field Activities/Labs

SM-2 Block IV Missile:

Modify Existing Approach:

SM-2 Block IV Missiles

Battle Space: In the Atmosphere

Threats: **Short Range**

Ballistic Missiles

Quantity: 72 (as of 16 November 2011)

Provider: Raytheon, Arizona &

Navy Field Activities/Labs

SM-3 Block IA Missile:

Approach: Add 3rd Stage & Kill

Vehicle to Existing

SM-2 Blk IV Booster Stack

Battle Space: Above the Atmosphere

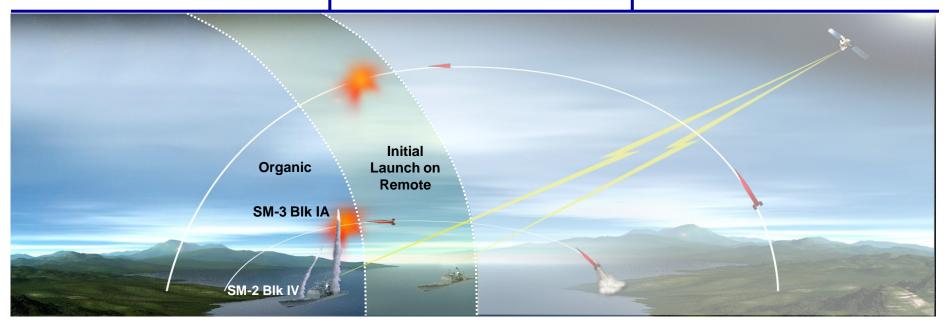
Threats: **Short to Intermediate Range**

Ballistic Missiles

Quantity: 81 (as of 16 November 2011)

Provider: Raytheon, Arizona & Navy

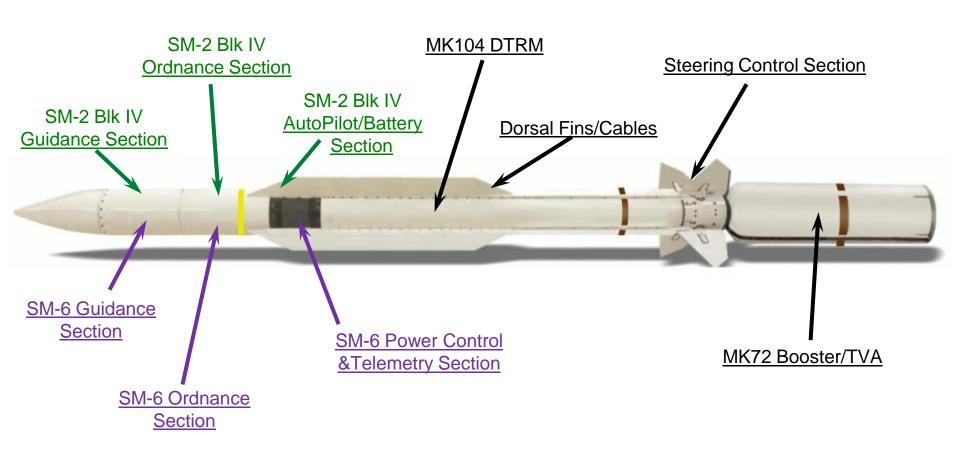
Field Activities/Labs





Aegis BMD SM-6 Missile Profile

Aegis BMD



BLACK = Common

PURPLE = SM-6 Unique

GREEN = SM-2 Blk IV Unique